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CLAIMS

1.   A data merge unit for providing an interleaved data
stream, the data stream including data frames received on
5   two or more input channels, wherein complete data frames
from each of the two or more input channels are arranged in
time-slots of the interleaved data stream, the data merge
unit comprising:
        an input unit to receive data frames from two or more
10   input channels;
        a frame merge buffer arranged to receive data frames
from the two or more input channels via the input unit and
store said data frames; and,
        an output generator to generate the interleaved data
15   stream, the output generator being configured to select
complete data frames from the frame merge buffer and
arrange said complete data frames in the interleaved data
stream.

20   2.   A data merge unit according to claim 1, in which the
input unit is arranged to identify the end of each of said
data frames and generate a pointer to identify the location
of the end of each of said data frames in the frame merge
buffer, for use in generating the interleaved data stream.
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3.   A data merge unit according to claim 1, in which the
output generator is operable in a first mode to select
complete data frames in the frame merge buffer from an
identified input channel and output the selected frames in
30   a corresponding time-slot of the interleaved data stream
for that input channel independently of other input
channels and, in a second mode in which complete data
frames from two or more of the two or more input channels

are selected from the frame merge buffer and merged and
provided in a common time-slot of the interleaved data
stream.

5   4.   A data merge unit according to claim 3, in which when
operating in the second mode, a look up table of values is
provided to identify one or more complete data frames from
one or more input channels for transfer from the frame
merge buffer for merging with one or more complete data
10 frames from one or more other input channels in a common
time-slot of the interleaved data stream.

    5.   A data merge unit according to claim 4, in which the
look up table of values is generated in dependence on the
15 identified ends of the data frames.

    6.   A data merge unit according to claim 5, in which each
entry in the look up table comprises an identified input
channel, each entry corresponding to the end of a data
20 frame received on the corresponding identified input
channel.

    7.   A data merge unit according to claim 6, in which as
data is received by the frame merge buffer, if it is
25 determined that a component data word of a data frame is
the last word of the frame, a corresponding entry is made
in the look up table.

    8.   A data merge unit according to any of claims 1 to 7,
30 in which the input unit comprises a round-robin input
arbiter arranged to service each of the two or more input
channels and provide data frames therefrom to the frame
merge buffer.

9.   A data merge unit according to claim 4, in which the output generator comprises a round-robin output arbiter arranged, when the data merge unit is operating in the
5   second mode, to read and output a complete data frame from a corresponding input channel in the frame merge buffer in dependence on values obtained from the look up table.

10.   A data merge unit according to any of claims 1 to 9,
10   the data merge unit being a hardware data merge unit.

11.   A data merge unit according to claim 10, in which the data merge unit is arranged in hardware selected from the group consisting of one or more Application Specific
15   Integrated Circuits, one or more Field Programmable Gate Arrays, or any other suitably configured hardware.

12.   A network analyser, comprising:
       a data merge unit according to any of claims 1 to 11;
20   and,
       a logic unit to analyse the interleaved data stream provided by said data merge unit.

13.   A network analyser according to claim 12, in which the
25   logic unit is configured to provide one or more functions selected from the group consisting of network management and network load balancing.

14.   A method of producing an interleaved data stream of
30   data frames received on two or more input channels, the interleaved data stream being made up of complete data frames from each of the two or more input channels arranged in defined time-slots, the method comprising:

receiving one or more data frames on two or more input
channels;

storing said received data frames in a frame merge
buffer; and,

5   selecting complete data frames from the frame merge
buffer and arranging said complete data frames in the
interleaved data stream.

15.   A method according to claim 14, in which the method
10 comprises:

storing a pointer to identify the end of each of said
received data frames; and,

using said stored pointers to generate said
interleaved data stream.

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16.   A method according to claims 14 or 15, in which the
method comprises:

in a first mode outputting complete data frames from a
selected input channel in a corresponding time-slot of the
20 interleaved data stream for that input channel
independently of other input channels and in a second mode
merging complete data frames from at least two of the two
or more input channels and providing said merged data in a
common time-slot of the interleaved data stream.

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17.   A method according to claim 16, in which when
operating in the second mode, a look up table of values is
provided and used to identify one or more complete data
frames from one or more input channels for transfer from
30 the frame merge buffer for merging with one or more
complete data frames from one or more other input channels
in a common time-slot of the interleaved data stream.

18.   A method according to claim 17, in which values in the look up table are generated in dependence on ends of data frames.

19.   A method according to any of claims 14 to 18, in which the interleaved data stream is generated at full line rate of the input channels.

20.   A method of analysing a network, the method comprising:

producing an interleaved data stream of complete data frames received on two or more input channels according to the method of any of claims 14 to 19, the data channels associated with a network to be analysed;

providing said interleaved data stream to logic to analyse said data stream; and,

analysing said data stream, thereby analysing the network.

21.   A data merge unit, comprising:

input means to receive data frames from two or more input channels;

data merge means to merge complete data frames received from the two or more input channels into a time division multiplexed interleaved data stream, wherein the data merge unit is arranged in hardware.

22.   A data merge unit according to claim 21, in which the hardware is selected from the group consisting of one or more Application Specific Integrated Circuits, one or more Field Programmable Gate Arrays, or any other suitably configured hardware.

23.   A data merge unit according to claim 21 or 22, in
which the data merge means is arranged when merging data
5   into the time division multiplexed interleaved data stream
to ensure only complete data frames are provided in the
time division multiplexed interleaved data stream.